

In the claims:

1 1. In a two-way radio communication system in which at least a first selected
2 forward-link data is communicated by a network station upon a forward link channel to at least a
3 first selected mobile station, an improvement of apparatus for the first selected mobile station for
4 facilitating selection of a power level at which the first selected forward-link data is
5 communicated, said apparatus comprising:

6 a first channel condition indicia measurer positioned at the first selected mobile
7 station, said first channel condition indicia measurer for measuring an indicia of communication
8 quality levels upon the forward link channel and for forming a first channel-condition indicia
9 value responsive thereto; and

10 a first data rate selector coupled to said first channel condition indicia measurer to
11 receive the first channel-condition indicia value, said first data rate selector for selecting a first
12 data rate at which to communicate subsequent first selected forward-link data upon the forward
13 link and for forming a first data rate selection value responsive to selection made thereat, an
14 indication of the first data rate selection value, when returned to the network station, used to
15 select the power level at which to communicate the subsequent first selected forward-link data to
16 the first selected mobile station.

1 2. The apparatus of claim 1 wherein the radio communication defines a MAC
2 (Medium Access Control) channel and wherein the indication of the data rate selection value,
3 when returned to the network station, is used to select the power level at which to communicate
4 subsequent first selected MAC-channel data to the first selected mobile station.

1 3. The apparatus of claim 2 wherein the radio communication system comprises a
2 1xEV-DO packet radio communication system, wherein the MAC channel comprises a TDM
3 (Time Division Multiplexed) channel upon which the first selected MAC-channel data is
4 communicated, and wherein said channel condition indicia measurer measures the indicia of the
5 communication condition levels at least within the TDM channel of which the MAC channel is
6 comprised.

1 4. The apparatus of claim 3 wherein the at least the first selected mobile station
2 comprises the first selected mobile station and at least a second selected mobile station, wherein
3 second selected MAC-channel data is also communicated upon the MAC channel by the network
4 station to the second mobile station, said apparatus further comprising:

5 at least a second channel condition indicia measurer positioned at the at least the
6 second selected mobile station, said second channel condition indicia measurer for measuring an
7 indicia of communication condition levels upon the MAC channel and for forming a second
8 channel condition indicia value responsive thereto; and

9 at least a second data rate selector coupled to said second channel condition
10 indicia measurer to receive the second channel-condition indicia value, said second data rate
11 selector for selecting a second data rate at which to communicate subsequent second selected
12 MAC-channel data upon the MAC channel and for forming a second data rate selection value
13 responsive to selection made thereat, an indication of the second data rate selection value, when
14 returned to the network station, used to select the power level at which to communicate the
15 subsequent second selected MAC-channel data to the second selected mobile station.

1 5. The apparatus of claim 3 further comprising a DRC (Data Rate Control)

2 Command generator for generating a DRC Command of a command value responsive to the first
3 data rate selection value formed by said first data rate selector, the DRC Command for
4 communication to the network station.

1 6. In the two-way radio communication system of claim 1, a further improvement of

2 apparatus for the network station for facilitating the selection of the power level at which the at
3 least the first forward-link data is communicated, said apparatus comprising:

4 a data rate selection value detector coupled to receive an indication of the first
5 data rate selection value formed by said first data rate selector once returned to the network
6 station, said data rate selection value detector for detecting the first data rate selection value;

7 a power level selector coupled to said data rate selection value detector, said
8 power level selector for selecting the power level at which to communicate the first selected
9 forward-link data to the first selected mobile station responsive to the first data rate selection
10 value detected by said data rate selection value detector.

1 7. The apparatus of claim 6 wherein the power level selected by said power level

2 selector is inversely related to the data rate selection value.

1 8. The apparatus of claim 6 wherein the radio communication system comprises a

2 1xEV-DO packet radio communication system which defines a MAC (Medium Access Control)
3 channel, wherein the first selected forward-link data comprises first selected MAC channel data,
4 and wherein the indication of the data rate selection value to which said data rate selection value

5 selector is coupled to receive is representative of the first data rate selected by said first data rate
6 selector at which to communicate subsequent first selected MAC channel data to the first mobile
7 station.

1 9. The apparatus of claim 8 wherein the 1xEV-DO packet radio communication
2 system forms a multi-user system, wherein the at least the first selected mobile communication
3 station comprises the first selected mobile station and at least a second selected mobile station,
4 wherein second selected MAC-channel data is also communicated upon the MAC channel by the
5 network station to the second mobile station, said apparatus further comprising:

6 at least a second channel condition indicia measurer positioned at the at least the
7 second selected mobile station, said second channel condition indicia measurer for measuring an
8 indicia of communication condition levels upon the MAC channel and for forming a second
9 channel condition indicia value responsive thereto; and

10 at least a second data rate selector coupled to said second channel condition
11 indicia measurer to receive the second channel-condition indicia value, said second data rate
12 selector for selecting a second data rate at which to communicate subsequent second selected
13 MAC-channel data upon the MAC channel and for forming a second data rate selection value
14 responsive to selection made thereat, an indication of the second data rate selection value, when
15 returned to the network station, used to select the power level at which to communicate the
16 subsequent second selected MAC-channel data to the second selected mobile station.

1 10. The apparatus of claim 9 wherein said data rate selection value detector is further
2 coupled to receive an indication of the second data rate selection value formed by said second

3 data rate selector, said data rate selection value detector further for detecting the second data rate
4 selection value.

1 11. The apparatus of claim 10 wherein said power level selector further selects the
2 power level at which to communicate second selected MAC-channel data to the second selected
3 mobile station.

1 12. The apparatus of claim 11 wherein said power level selector selects the power
2 levels at which subsequently to communicate the first selected MAC-channel data and the
3 second selected MAC-channel data, respectively, upon the MAC-channel, the power levels,
4 when summed together, are within an allowable maximum power level.

1 13. The apparatus of claim 12 wherein the first and at least second data rate selection
2 values, formed by said first data rate selector and said second data rate selector, respectively, are
3 selected from a set of allowable data rate selection values.

1 14. The apparatus of claim 13 wherein the power levels selected by said power level
2 selector are selected responsive at least to the maximum allowable power level, and to the first
3 and at least the second data rate selection values.

1 15. The apparatus of claim 14 wherein the 1xEV-DO packet radio communication
2 system defines a current-usage set of mobile stations, the current-usage set of mobile stations
3 including the first and at least second mobile stations, wherein each mobile station of the current-

- 4 usage set is allocated a unique communication code and wherein the power levels selected by
- 5 said power level selector are selected further responsive to a number of mobile stations contained
- 6 in the current-usage set.

1 16. In a method for communicating in a two-way radio communication system in
2 which at least first selected forward-link data is communicated by a network station upon a
3 forward link channel to at least a first selected mobile station, an improvement of a method for
4 facilitating selection of a power level at which the first-selected forward link data is
5 communicated, said method comprising:

6 measuring, at the first selected mobile station, an indicia of communication
7 condition levels upon the forward link channel;

8 forming a first channel-condition indicia value responsive to measurements made
9 during said operation of measuring;

10 selecting a first data rate at which to communicate subsequent first-selected
11 forward-link data upon the forward link; and

12 forming a first data rate selection value responsive to selection made during said
13 operation of selecting, an indication of the first data rate selection value, when returned to the
14 network station, used to select the power level at which to communicate the subsequent first-
15 selected forward link data.

1 17. The method of claim 16 further comprising the operations of:

2 sending the first data rate selection value formed during said operation of forming
3 the first data rate selection value to the network station;

4 detecting the first data rate selection value once received at the network station;

5 and

6 selecting the power level at which to communicate the first-selected forward-link
7 data to the first selected mobile station responsive to the first data rate selection value detected
8 during said operation of detecting.

1 18. The method of claim 17 wherein the power level selected during said operation of
2 selecting is inversely related to the data rate selection value.

1 19. The method of claim 17 wherein the radio communication system comprises a
2 multi-user communication system, wherein the at least the first selected mobile station comprises
3 the first selected mobile station and at least a second selected mobile station, said method further
4 comprising the operations of:

5 measuring, at the second selected mobile station, an indicia of communication
6 condition levels upon the forward link channel;

7 forming a second channel-quality indicia value responsive to measurements made
8 during said operation of measuring at the second selected mobile station;

9 selecting a second data rate at which to communicate subsequent second-selected
10 forward-link data upon the forward link;

11 forming a second data rate selection value responsive to selection made during
12 said operation of selecting the second data rate; and

13 sending the second data rate selection value to the network station.

- 1 20. The method of claim 19 wherein said operation of selecting the power level
2 comprises both selecting the power level at which to communicate the first-selected forward-link
3 data and also the power level at which to communicate the second-selected forward-link data.